

## SEQUENCE LISTING

<110> Kim, Jin-Soo  
 Kwon, Young Do  
 Kim, Hyun-Won  
 Ryu, Eun-Hyun  
 Hwang, Moon-Sun

<120> ZINC FINGER DOMAINS AND METHODS OF  
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 <213> HIV-1

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<400> 5  
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<213> Artificial Sequence

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<223> optimal binding site

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<223> optimal binding site

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<210> 8

<211> 49

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ccggcgagcg ggcggtcgag cgggcgtgag cgggcggatc gagcggggcg

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<213> HIV-1

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<211> 50

<212> DNA

<213> HIV-1

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ccggtgtgctt gggcggctgc ttgggcgtgc ttgggcgggc tgcttggggcg

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<211> 50

<212> DNA

<213> HIV-1

<400> 11

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<213> HIV-1

<400> 12

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<210> 16  
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<210> 17  
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<223> plasmid sequence

<221> CDS  
<222> (1)...(81)

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aaa gag ggt ggg tcg acc ttc cgg act ggc cag gaa cgc cca gat ccg 48  
Lys Glu Gly Gly Ser Thr Phe Arg Thr Gly Gln Glu Arg Pro Asp Pro  
1 5 10 15

cgg gaa ttc aga tct act agt gcg gcc gct aag taagtaagac gtcgagctcg 101  
Arg Glu Phe Arg Ser Thr Ser Ala Ala Ala Lys  
20 25

ccatcgcggt ggaagcttt 120

<210> 19

<211> 27  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> plasmid sequence

<400> 19  
 Lys Glu Gly Gly Ser Thr Phe Arg Thr Gly Gln Glu Arg Pro Asp Pro  
 1 5 10 15  
 Arg Glu Phe Arg Ser Thr Ser Ala Ala Ala Lys  
 20 25

<210> 20  
 <211> 303  
 <212> DNA  
 <213> Artificial Sequence

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<221> CDS  
 <222> (25)...(291)

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 ggggtcgacct tccggactgg ccag gaa cgc cca tat gct tgc cct gtc gag 51  
 Glu Arg Pro Tyr Ala Cys Pro Val Glu  
 1 5  
 tcc tgc gat cgc cgc ttt tct cgc tcg gat gag ctt acc cgc cat atc 99  
 Ser Cys Asp Arg Arg Phe Ser Arg Ser Asp Glu Leu Thr Arg His Ile  
 10 15 20 25  
 cgc atc cac act ggc cag aag ccc ttc cag tgt cga atc tgc atg cgt 147  
 Arg Ile His Thr Gly Gln Lys Pro Phe Gln Cys Arg Ile Cys Met Arg  
 30 35 40  
 aac ttc agt cgt agt gac cac ctt acc acc cac atc cgg acc cac acc 195  
 Asn Phe Ser Arg Ser Asp His Leu Thr Thr His Ile Arg Thr His Thr  
 45 50 55  
 ggc gag aag cct ttt gcc tgt gac att tgt ggg agg aag ttt gcc agg 243  
 Gly Glu Lys Pro Phe Ala Cys Asp Ile Cys Gly Arg Lys Phe Ala Arg  
 60 65 70  
 agt gat gaa cgc aag agg cat acc aaa atc cat tta aga cag aag gat 291  
 Ser Asp Glu Arg Lys Arg His Thr Lys Ile His Leu Arg Gln Lys Asp  
 75 80 85  
 ccgcgggaat cc 303

<210> 21  
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 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> plasmid sequence

<400> 21  
 Glu Arg Pro Tyr Ala Cys Pro Val Glu Ser Cys Asp Arg Arg Phe Ser

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Arg Ser Asp Glu Leu Thr Arg His Ile Arg Ile His Thr Gly Gln Lys
      20           25           30
Pro Phe Gln Cys Arg Ile Cys Met Arg Asn Phe Ser Arg Ser Asp His
      35           40           45
Leu Thr Thr His Ile Arg Thr His Thr Gly Glu Lys Pro Phe Ala Cys
      50           55           60
Asp Ile Cys Gly Arg Lys Phe Ala Arg Ser Asp Glu Arg Lys Arg His
      65           70           75           80
Thr Lys Ile His Leu Arg Gln Lys Asp
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<210> 22  
 <211> 102  
 <212> DNA  
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<220>  
 <221> CDS  
 <222> (1)...(102)

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<400> 22
acc ggg cag aaa ccg tac aaa tgt aag caa tgt ggg aaa gct ttt gga      48
Thr Gly Gln Lys Pro Tyr Lys Cys Lys Gln Cys Gly Lys Ala Phe Gly
      1           5           10           15

tgt ccc tca aac ctt cga agg cat gga agg act cac acc ggc gag aaa      96
Cys Pro Ser Asn Leu Arg Arg His Gly Arg Thr His Thr Gly Glu Lys
      20           25           30

ccg cgg
Pro Arg
      102

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<210> 23  
 <211> 34  
 <212> PRT  
 <213> Homo sapiens

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<400> 23
Thr Gly Gln Lys Pro Tyr Lys Cys Lys Gln Cys Gly Lys Ala Phe Gly
      1           5           10           15
Cys Pro Ser Asn Leu Arg Arg His Gly Arg Thr His Thr Gly Glu Lys
      20           25           30
Pro Arg

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<210> 24  
 <211> 102  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(102)

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<400> 24
acc ggg gag aag cca tac aag tgt aag gag tgt ggg aaa gcc ttc aac      48
Thr Gly Glu Lys Pro Tyr Lys Cys Lys Glu Cys Gly Lys Ala Phe Asn
      1           5           10           15

```

cac agc tcc aac ttc aat aaa cac cac aga atc cac acc ggc gaa aag 96  
 His Ser Ser Asn Phe Asn Lys His His Arg Ile His Thr Gly Glu Lys  
                   20                                  25                                  30

ccg cgg 102  
 Pro Arg

<210> 25  
 <211> 34  
 <212> PRT  
 <213> Homo sapiens

<400> 25  
 Thr Gly Glu Lys Pro Tyr Lys Cys Lys Glu Cys Gly Lys Ala Phe Asn  
   1                                  5                                  10                                  15  
 His Ser Ser Asn Phe Asn Lys His His Arg Ile His Thr Gly Glu Lys  
                   20                                  25                                  30  
 Pro Arg

<210> 26  
 <211> 102  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(102)

<400> 26 48  
 acc ggg gag agg cca ttt gaa tgt aag gaa tgt ggg aaa gcc ttt agt  
 Thr Gly Glu Arg Pro Phe Glu Cys Lys Glu Cys Gly Lys Ala Phe Ser  
   1                                  5                                  10                                  15

agt ggt tca aac ttc act cga cat cag aga att cac acc ggt gaa aag 96  
 Ser Gly Ser Asn Phe Thr Arg His Gln Arg Ile His Thr Gly Glu Lys  
                   20                                  25                                  30

ccg cgg 102  
 Pro Arg

<210> 27  
 <211> 34  
 <212> PRT  
 <213> Homo sapiens

<400> 27  
 Thr Gly Glu Arg Pro Phe Glu Cys Lys Glu Cys Gly Lys Ala Phe Ser  
   1                                  5                                  10                                  15  
 Ser Gly Ser Asn Phe Thr Arg His Gln Arg Ile His Thr Gly Glu Lys  
                   20                                  25                                  30  
 Pro Arg

<210> 28  
 <211> 108

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<210> 31
<211> 34
<212> PRT
<213> Homo sapiens
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&lt;400&gt; 31

Thr Gly Glu Arg Pro Tyr Glu Cys Asn Glu Cys Gly Lys Ala Phe Ala  
 1 5 10 15  
 Gln Asn Ser Thr Leu Arg Val His Gln Arg Ile His Thr Gly Glu Lys  
 20 25 30  
 Pro Arg

&lt;210&gt; 32

&lt;211&gt; 102

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)...(102)

&lt;400&gt; 32

acc ggg gag agg cct tat gag tgt aat tac tgt gga aaa acc ttt agt 48  
 Thr Gly Glu Arg Pro Tyr Glu Cys Asn Tyr Cys Gly Lys Thr Phe Ser  
 1 5 10 15  
 gtg agc tca acc ctt att aga cat cag aga atc cac acc ggc gag aga 96  
 Val Ser Ser Thr Leu Ile Arg His Gln Arg Ile His Thr Gly Glu Arg  
 20 25 30  
 ccg cgg 102  
 Pro Arg

&lt;210&gt; 33

&lt;211&gt; 34

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 33

Thr Gly Glu Arg Pro Tyr Glu Cys Asn Tyr Cys Gly Lys Thr Phe Ser  
 1 5 10 15  
 Val Ser Ser Thr Leu Ile Arg His Gln Arg Ile His Thr Gly Glu Arg  
 20 25 30  
 Pro Arg

&lt;210&gt; 34

&lt;211&gt; 69

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)...(69)

&lt;400&gt; 34

tat cag tgc aac att tgc gga aaa tgt ttc tcc tgc aac tcc aac ctc 48  
 Tyr Gln Cys Asn Ile Cys Gly Lys Cys Phe Ser Cys Asn Ser Asn Leu  
 1 5 10 15  
 cac agg cac cag aga acg cac 69  
 His Arg His Gln Arg Thr His



20

<210> 35  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 35  
 Tyr Gln Cys Asn Ile Cys Gly Lys Cys Phe Ser Cys Asn Ser Asn Leu  
 1 5 10 15  
 His Arg His Gln Arg Thr His  
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<210> 36  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 36  
 tat gca tgt cat cta tgt gga aaa gcc ttc act cag agt tct cac ctt 48  
 Tyr Ala Cys His Leu Cys Gly Lys Ala Phe Thr Gln Ser Ser His Leu  
 1 5 10 15  
 aga aga cat gag aaa act cac 69  
 Arg Arg His Glu Lys Thr His  
 20

<210> 37  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 37  
 Tyr Ala Cys His Leu Cys Gly Lys Ala Phe Thr Gln Ser Ser His Leu  
 1 5 10 15  
 Arg Arg His Glu Lys Thr His  
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<210> 38  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 38  
 tat aaa tgc ggc cag tgt ggg aag ttc tac tcg cag gtc tcc cac ctc 48  
 Tyr Lys Cys Gly Gln Cys Gly Lys Phe Tyr Ser Gln Val Ser His Leu  
 1 5 10 15  
 acc cgc cac cag aaa atc cac 69  
 Thr Arg His Gln Lys Ile His  
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<210> 39  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 39  
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 1 5 10 15  
 Thr Arg His Gln Lys Ile His  
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<210> 40  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1) ... (69)

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 1 5 10 15  
 aga aga cat gag aaa act cac 69  
 Arg Arg His Glu Lys Thr His  
 20

<210> 41  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 41  
 Tyr Ala Cys His Leu Cys Gly Lys Ala Phe Thr Gln Cys Ser His Leu  
 1 5 10 15  
 Arg Arg His Glu Lys Thr His  
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<210> 42  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1) ... (69)

<400> 42  
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 1 5 10 15  
 aga aga cat gag aaa act cac 69  
 Arg Arg His Glu Lys Thr His  
 20

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<400> 46
ttt gag tgt aaa gat tgc ggg aaa gct ttc att cag aag tca aac ctc      48
Phe Glu Cys Lys Asp Cys Gly Lys Ala Phe Ile Gln Lys Ser Asn Leu
  1             5             10             15

atc aga cac cag aga act cac      69
Ile Arg His Gln Arg Thr His
          20

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<210> 47  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 47  
 Phe Glu Cys Lys Asp Cys Gly Lys Ala Phe Ile Gln Lys Ser Asn Leu  
 1 5 10 15  
 Ile Arg His Gln Arg Thr His  
 20

<210> 48  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 48  
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 Tyr Val Cys Arg Glu Cys Arg Arg Gly Phe Ser Gln Lys Ser Asn Leu  
 1 5 10 15  
 atc aga cac cag agg acg cac 69  
 Ile Arg His Gln Arg Thr His  
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<210> 49  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 49  
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 1 5 10 15  
 Ile Arg His Gln Arg Thr His  
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 <221> CDS  
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 1 5 10 15  
 att gta cat cag aga aca cac 69  
 Ile Val His Gln Arg Thr His  
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<210> 51

<211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 51  
 Tyr Glu Cys Asn Thr Cys Arg Lys Thr Phe Ser Gln Lys Ser Asn Leu  
 1 5 10 15  
 Ile Val His Gln Arg Thr His  
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<210> 52  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 52  
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 Tyr Val Cys Ser Lys Cys Gly Lys Ala Phe Thr Gln Ser Ser Asn Leu  
 1 5 10 15  
 act gta cat caa aaa atc cac 69  
 Thr Val His Gln Lys Ile His  
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<210> 53  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 53  
 Tyr Val Cys Ser Lys Cys Gly Lys Ala Phe Thr Gln Ser Ser Asn Leu  
 1 5 10 15  
 Thr Val His Gln Lys Ile His  
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<210> 54  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 54  
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 Tyr Lys Cys Asp Glu Cys Gly Lys Asn Phe Thr Gln Ser Ser Asn Leu  
 1 5 10 15  
 att gta cat aag aga att cat 69  
 Ile Val His Lys Arg Ile His  
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<210> 55  
 <211> 23

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<212> PRT  
 <213> Homo sapiens

<400> 55  
 Tyr Lys Cys Asp Glu Cys Gly Lys Asn Phe Thr Gln Ser Ser Asn Leu  
 1 5 10 15  
 Ile Val His Lys Arg Ile His  
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<210> 56  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 56  
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 Tyr Glu Cys Asp Val Cys Gly Lys Thr Phe Thr Gln Lys Ser Asn Leu  
 1 5 10 15

ggt gta cat cag aga act cat 69  
 Gly Val His Gln Arg Thr His  
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<210> 57  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 57  
 Tyr Glu Cys Asp Val Cys Gly Lys Thr Phe Thr Gln Lys Ser Asn Leu  
 1 5 10 15  
 Gly Val His Gln Arg Thr His  
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<210> 58  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 58  
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 Tyr Lys Cys Pro Asp Cys Gly Lys Ser Phe Ser Gln Ser Ser Ser Leu  
 1 5 10 15

att cgc cac cag cgg aca cac 69  
 Ile Arg His Gln Arg Thr His  
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<210> 59  
 <211> 23  
 <212> PRT

<213> Homo sapiens

<400> 59

Tyr Lys Cys Pro Asp Cys Gly Lys Ser Phe Ser Gln Ser Ser Ser Leu  
 1 5 10 15  
 Ile Arg His Gln Arg Thr His  
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<210> 60

<211> 69

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)...(69)

<400> 60

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 Tyr Glu Cys Gln Asp Cys Gly Arg Ala Phe Asn Gln Asn Ser Ser Leu  
 1 5 10 15

ggg cgg cac aag agg aca cac 69  
 Gly Arg His Lys Arg Thr His  
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<210> 61

<211> 23

<212> PRT

<213> Homo sapiens

<400> 61

Tyr Glu Cys Gln Asp Cys Gly Arg Ala Phe Asn Gln Asn Ser Ser Leu  
 1 5 10 15  
 Gly Arg His Lys Arg Thr His  
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<210> 62

<211> 69

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)...(69)

<400> 62

tac aaa tgt gaa gaa tgt ggc aaa gct ttt aac cag tcc tca acc ctt 48  
 Tyr Lys Cys Glu Glu Cys Gly Lys Ala Phe Asn Gln Ser Ser Thr Leu  
 1 5 10 15

act aga cat aag ata gtt cat 69  
 Thr Arg His Lys Ile Val His  
 20

<210> 63

<211> 23

<212> PRT

<213> Homo sapiens

&lt;400&gt; 63

Tyr Lys Cys Glu Glu Cys Gly Lys Ala Phe Asn Gln Ser Ser Thr Leu  
 1 5 10 15  
 Thr Arg His Lys Ile Val His  
 20

&lt;210&gt; 64

&lt;211&gt; 69

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1) ... (69)

&lt;400&gt; 64

tat aag tgc atg gag tgt ggg aag gct ttt aac cgc agg tca cac ctc 48  
 Tyr Lys Cys Met Glu Cys Gly Lys Ala Phe Asn Arg Arg Ser His Leu  
 1 5 10 15

aca cgg cac cag cgg att cac 69  
 Thr Arg His Gln Arg Ile His  
 20

&lt;210&gt; 65

&lt;211&gt; 23

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 65

Tyr Lys Cys Met Glu Cys Gly Lys Ala Phe Asn Arg Arg Ser His Leu  
 1 5 10 15  
 Thr Arg His Gln Arg Ile His  
 20

&lt;210&gt; 66

&lt;211&gt; 69

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1) ... (69)

&lt;400&gt; 66

tat aca tgt aaa cag tgt ggg aaa gcc ttc agt gtt tcc agt tcc ctt 48  
 Tyr Thr Cys Lys Gln Cys Gly Lys Ala Phe Ser Val Ser Ser Ser Leu  
 1 5 10 15

cga aga cat gaa acc act cac 69  
 Arg Arg His Glu Thr Thr His  
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&lt;210&gt; 67

&lt;211&gt; 23

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens



<400> 67

Tyr Thr Cys Lys Gln Cys Gly Lys Ala Phe Ser Val Ser Ser Ser Leu  
 1 5 10 15  
 Arg Arg His Glu Thr Thr His  
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<210> 68

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> purified polypeptide

<221> VARIANT

<222> 4

<223> Xaa = any amino acid; 2-5 amino acids in length

<221> VARIANT

<222> 2, 6-8, 10, 12, 16

<223> Xaa = any amino acid

<221> VARIANT

<222> 1, 9

<223> Xaa = Phe or Tyr

<221> VARIANT

<222> 15

<223> Xaa = hydrophobic residue

<221> VARIANT

<222> 19

<223> Xaa = any amino acid; 3-5 amino acids in length

<400> 68

Xaa Xaa Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys Xaa Ser Asn Xaa Xaa  
 1 5 10 15  
 Arg His Xaa His  
 20

<210> 69

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> purified polypeptide

<221> VARIANT

<222> 4

<223> Xaa = any amino acid; 2-5 amino acids in length

<221> VARIANT

<222> 2, 6-8, 10, 12, 16

<223> Xaa = any amino acid

<221> VARIANT

<222> 1, 9

<223> Xaa = Phe or Tyr

<221> VARIANT

<222> 15  
 <223> Xaa = hydrophobic residue  
  
 <221> VARIANT  
 <222> 19  
 <223> Xaa = any amino acid; 3-5 amino acids in length  
  
 <400> 69  
 Xaa Xaa Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa His Xaa Ser Asn Xaa Xaa  
 1 5 10 15  
 Lys His Xaa His  
 20  
  
 <210> 70  
 <211> 20  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> purified polypeptide  
  
 <221> VARIANT  
 <222> 4  
 <223> Xaa = any amino acid; 2-5 amino acids in length  
  
 <221> VARIANT  
 <222> 2, 6-8, 10, 12, 16  
 <223> Xaa = any amino acid  
  
 <221> VARIANT  
 <222> 1, 9  
 <223> Xaa = Phe or Tyr  
  
 <221> VARIANT  
 <222> 15  
 <223> Xaa = hydrophobic residue  
  
 <221> VARIANT  
 <222> 19  
 <223> Xaa = any amino acid; 3-5 amino acids in length  
  
 <400> 70  
 Xaa Xaa Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa Ser Xaa Ser Asn Xaa Xaa  
 1 5 10 15  
 Arg His Xaa His  
 20  
  
 <210> 71  
 <211> 20  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> purified polypeptide  
  
 <221> VARIANT  
 <222> 4  
 <223> Xaa = any amino acid; 2-5 amino acids in length  
  
 <221> VARIANT  
 <222> 2, 6-8, 10, 12, 16

<212> PRT

<213> Artificial Sequence

<220>

<223> purified polypeptide

<221> VARIANT

<222> 4

<223> Xaa = any amino acid; 2-5 amino acids in length

<221> VARIANT

<222> 2, 6-8, 10, 12, 16

<223> Xaa = any amino acid

<221> VARIANT

<222> 1, 9

<223> Xaa = Phe or Tyr

<221> VARIANT

<222> 15

<223> Xaa = hydrophobic residue

<221> VARIANT

<222> 19

<223> Xaa = any amino acid; 3-5 amino acids in length

<400> 73

Xaa	Xaa	Cys	Xaa	Cys	Xaa	Xaa	Xaa	Xaa	Xaa	Gln	Xaa	Ser	His	Xaa	Xaa
1				5					10					15	
Arg	His	Xaa	His												
			20												

<210> 74

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> purified polypeptide

<221> VARIANT

<222> 4

<223> Xaa = any amino acid; 2-5 amino acids in length

<221> VARIANT

<222> 2, 6-8, 10, 12, 16

<223> Xaa = any amino acid

<221> VARIANT

<222> 1, 9

<223> Xaa = Phe or Tyr

<221> VARIANT

<222> 15

<223> Xaa = hydrophobic residue

<221> VARIANT

<222> 19

<223> Xaa = any amino acid; 3-5 amino acids in length

<400> 74

Xaa	Xaa	Cys	Xaa	Cys	Xaa	Xaa	Xaa	Xaa	Xaa	Gln	Xaa	Ser	Asn	Xaa	Xaa
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

```

1                               5                               10                               15
Val His Xaa His
      20

<210> 75
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> purified polypeptide

<221> VARIANT
<222> 4
<223> Xaa = any amino acid; 2-5 amino acids in length

<221> VARIANT
<222> 2, 6-8, 10, 12, 16
<223> Xaa = any amino acid

<221> VARIANT
<222> 1, 9
<223> Xaa = Phe or Tyr

<221> VARIANT
<222> 14
<223> Xaa = Ser or Thr

<221> VARIANT
<222> 15
<223> Xaa = hydrophobic residue

<221> VARIANT
<222> (19)...(19)
<223> Xaa = any amino acid; 3-5 amino acids in length

<400> 75
Xaa Xaa Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa Gln Xaa Ser Xaa Xaa Xaa
 1                               5                               10                               15
Arg His Xaa His
      20

<210> 76
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> coordinating residue

<221> VARIANT
<222> 1, 9
<223> Xaa = Phe or Tyr

<221> VARIANT
<222> 2, 6-8, 10-14, 16, 17
<223> Xaa = any amino acid

<221> VARIANT
<222> 4
<223> Xaa = any amino acid; 2-5 amino acids in length

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<223> Xaa = hydrophobic residue

<223> Xaa = any amino acid; 3-5 amino acids in length

20

<213> Artificial Sequence

<223> polypeptide motif

<223> Xaa = Leu, Ile, Val, Met, Phe, Tyr, or Gly

<223> Xaa = Ala, Ser, Leu, Val, or Arg

<223> Xaa = any amino acid

<223> Xaa = Leu, Ile, Val, Met, Ser, Thr, Ala, Cys, or Asn

<223> Xaa = Leu, Ile, Val, or Met

<223> Xaa = Leu, Ile, or Val

<223> Xaa = Arg, Lys, Asn, Gln, Glu, Ser, Thr, Ala, Ile,  
or Tyr

```
<223> Xaa = Leu, Ile, Val, Phe, Ser, Thr, Asn, Lys, or
      His
```

<223> Xaa = Phe, Tyr, Val, or Cys

```
<210> 81
<211> 24
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<220>  
<223> synthetic oligonucleotide



<400> 84  
 gggcccgggg agaagcctta cgcatgtcca gtcgaatctt gtgatagaag attc 54  
  
 <210> 85  
 <211> 75  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> synthetic oligonucleotide  
  
 <221> misc\_feature  
 <222> (0)...(0)  
 <223> n = A, T, G, or C; b = G, C, or T; s = G or C  
  
 <400> 85  
 ctccccggg ttcgccggtg tggattctga tatgsnbsnb aagsnbsnbs nbsnbtgaga 60  
 atcttctatc acaag 75  
  
 <210> 86  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> synthetic oligonucleotide  
  
 <400> 86  
 ctagaccgg gaattcgctg acg 23  
  
 <210> 87  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> synthetic oligonucleotide  
  
 <400> 87  
 gatccgtcga cgaattcccg ggt 23  
  
 <210> 88  
 <211> 38  
 <212> DNA  
 <213> syArtificial Sequence  
  
 <220>  
 <223> synthetic oligonucleotide  
  
 <221> misc\_feature  
 <222> (0)...(0)  
 <223> n = A, T, G, or C  
  
 <400> 88  
 ccggtnnntg ggcgtacnnn tgggcgtcan nntgggcg 38  
  
 <210> 89  
 <211> 38  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> synthetic oligonucleotide  
  
 <221> misc\_feature  
 <222> (0)...(0)  
 <223> n = A, T, G, or C  
  
 <400> 89  
 tcgacgcccc nnntgacgcc cannngtacg cccannna 38  
  
 <210> 90  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> synthetic probe for gel shift assay  
  
 <400> 90  
 ccgggtcgcg cgtgggcggt accg 24  
  
 <210> 91  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> synthetic probe for gel shift assay  
  
 <400> 91  
 tcgacggtac cgcccacgcg cgac 24  
  
 <210> 92  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> synthetic probe for gel shift assay  
  
 <400> 92  
 ccgggtcgcg agcgggcggt accg 24  
  
 <210> 93  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> synthetic probe for gel shift assay  
  
 <400> 93  
 tcgacggtac cgcccgcgcg cgac 24  
  
 <210> 94  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>

<223> synthetic probe for gel shift assay  
 <400> 94  
 ccgggtcgtg cttgggcggt accg 24  
 <210> 95  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> synthetic probe for gel shift assay  
 <400> 95  
 tcgacggtac cgcccaagca cgac 24  
 <210> 96  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> synthetic probe for gel shift assay  
 <400> 96  
 ccgggtcggg actgggcggt accg 24  
 <210> 97  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> synthetic probe for gel shift assay  
 <400> 97  
 tcgacggtac cgcccagtcc cgac 24  
 <210> 98  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> synthetic probe for gel shift assay  
 <400> 98  
 ccgggtcggg agtgggcggt accg 24  
 <210> 99  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> synthetic probe for gel shift assay  
 <400> 99  
 tcgacggtac cgcccactcc cgac 24  
 <210> 100

<211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> synthetic probe for gel shift assay

<400> 100  
 ccgggtcggg catgggcggg accg

24

<210> 101  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> synthetic probe for gel shift assay

<400> 101  
 tcgacgggtac cgcccatgtc cgac

24

<210> 102  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 102  
 tat aag tgt aag gaa tgt ggg cag gcc ttt aga cag cgt gca cat ctt  
 Tyr Lys Cys Lys Glu Cys Gly Gln Ala Phe Arg Gln Arg Ala His Leu  
 1 5 10 15

48

att cga cat cac aaa ctt cac  
 Ile Arg His His Lys Leu His  
 20

69

<210> 103  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 103  
 Tyr Lys Cys Lys Glu Cys Gly Gln Ala Phe Arg Gln Arg Ala His Leu  
 1 5 10 15  
 Ile Arg His His Lys Leu His  
 20

<210> 104  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 104

tat aag tgt cat caa tgt ggg aaa gcc ttt att caa tcc ttt aac ctt 48  
 Tyr Lys Cys His Gln Cys Gly Lys Ala Phe Ile Gln Ser Phe Asn Leu  
 1 5 10 15

cga aga cat gag aga act cac 69  
 Arg Arg His Glu Arg Thr His  
 20

<210> 105  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 105  
 Tyr Lys Cys His Gln Cys Gly Lys Ala Phe Ile Gln Ser Phe Asn Leu  
 1 5 10 15  
 Arg Arg His Glu Arg Thr His  
 20

<210> 106  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 106  
 ttc cag tgt aat cag tgt ggg gca tct ttt act cag aaa ggt aac ctc 48  
 Phe Gln Cys Asn Gln Cys Gly Ala Ser Phe Thr Gln Lys Gly Asn Leu  
 1 5 10 15

ctc cgc cac att aaa ctg cac 69  
 Leu Arg His Ile Lys Leu His  
 20

<210> 107  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 107  
 Phe Gln Cys Asn Gln Cys Gly Ala Ser Phe Thr Gln Lys Gly Asn Leu  
 1 5 10 15  
 Leu Arg His Ile Lys Leu His  
 20

<210> 108  
 <211> 22  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer for PCR

<221> misc\_feature  
 <222> (0)...(0)  
 <223> n =A, T, G, or C; 48-51 nucleotides in length

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<400> 108  
 acccacactg gccagaaacc cn 22

<210> 109  
 <211> 22  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer for PCR

<221> misc\_feature  
 <222> (0)...(0)  
 <223> n = A, T, G, or C; 42-45 nucleotides in length

<400> 109  
 gatctgaatt cattcaccgg tn 22

<210> 110  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 110  
 tac aaa tgt gaa gaa tgt ggc aaa gcc ttt agg cag tcc tca cac ctt 48  
 Tyr Lys Cys Glu Glu Cys Gly Lys Ala Phe Arg Gln Ser Ser His Leu  
 1 5 10 15

act aca cat aag ata att cat 69  
 Thr Thr His Lys Ile Ile His  
 20

<210> 111  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 111  
 Tyr Lys Cys Glu Glu Cys Gly Lys Ala Phe Arg Gln Ser Ser His Leu  
 1 5 10 15  
 Thr Thr His Lys Ile Ile His  
 20

<210> 112  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 112  
 tat gag tgt gat cac tgt gga aaa tcc ttt agc cag agc tct cat ctg 48  
 Tyr Glu Cys Asp His Cys Gly Lys Ser Phe Ser Gln Ser Ser His Leu

1                    5                    10                    15                    69

aat gtg cac aaa aga act cac  
Asn Val His Lys Arg Thr His  
20

<210> 113  
<211> 23  
<212> PRT  
<213> Homo sapiens

<400> 113  
Tyr Glu Cys Asp His Cys Gly Lys Ser Phe Ser Gln Ser Ser His Leu  
1                    5                    10                    15  
Asn Val His Lys Arg Thr His  
20

<210> 114  
<211> 69  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (1)...(69)

<400> 114  
tac atg tgc agt gag tgt ggg cga ggc ttc agc cag aag tca aac ctc                    48  
Tyr Met Cys Ser Glu Cys Gly Arg Gly Phe Ser Gln Lys Ser Asn Leu  
1                    5                    10                    15

atc ata cac cag agg aca cac                    69  
Ile Ile His Gln Arg Thr His  
20

<210> 115  
<211> 23  
<212> PRT  
<213> Homo sapiens

<400> 115  
Tyr Met Cys Ser Glu Cys Gly Arg Gly Phe Ser Gln Lys Ser Asn Leu  
1                    5                    10                    15  
Ile Ile His Gln Arg Thr His  
20

<210> 116  
<211> 69  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (1)...(69)

<400> 116  
tat gaa tgt gaa aaa tgt ggc aaa gct ttt aac cag tcc tca aat ctt                    48  
Tyr Glu Cys Glu Lys Cys Gly Lys Ala Phe Asn Gln Ser Ser Asn Leu  
1                    5                    10                    15

act aga cat aag aaa agt cat  
 Thr Arg His Lys Lys Ser His  
 20

69

<210> 117  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 117  
 Tyr Glu Cys Glu Lys Cys Gly Lys Ala Phe Asn Gln Ser Ser Asn Leu  
 1 5 10 15  
 Thr Arg His Lys Lys Ser His  
 20

<210> 118  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 118  
 tat gag tgc aat gaa tgt ggg aag ttt ttt agc cag agc tcc agc ctc  
 Tyr Glu Cys Asn Glu Cys Gly Lys Phe Phe Ser Gln Ser Ser Ser Leu  
 1 5 10 15

48

att aga cat agg aga agt cac  
 Ile Arg His Arg Arg Ser His  
 20

69

<210> 119  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 119  
 Tyr Glu Cys Asn Glu Cys Gly Lys Phe Phe Ser Gln Ser Ser Ser Leu  
 1 5 10 15  
 Ile Arg His Arg Arg Ser His  
 20

<210> 120  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 120  
 tat gag tgt cac gat tgc gga aag tcc ttt agg cag agc acc cac ctc  
 Tyr Glu Cys His Asp Cys Gly Lys Ser Phe Arg Gln Ser Thr His Leu  
 1 5 10 15

48



act cag cac cgg agg atc cac  
 Thr Gln His Arg Arg Ile His  
 20

69

<210> 121  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 121  
 Tyr Glu Cys His Asp Cys Gly Lys Ser Phe Arg Gln Ser Thr His Leu  
 1 5 10 15  
 Thr Gln His Arg Arg Ile His  
 20

<210> 122  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 122  
 tat gag tgt cac gat tgc gga aag tcc ttt agg cag agc acc cac ctc  
 Tyr Glu Cys His Asp Cys Gly Lys Ser Phe Arg Gln Ser Thr His Leu  
 1 5 10 15

48

act cgg cac cgg agg atc cac  
 Thr Arg His Arg Arg Ile His  
 20

69

<210> 123  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 123  
 Tyr Glu Cys His Asp Cys Gly Lys Ser Phe Arg Gln Ser Thr His Leu  
 1 5 10 15  
 Thr Arg His Arg Arg Ile His  
 20

<210> 124  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 124  
 cac aag tgc ctt gaa tgt ggg aaa tgc ttc agt cag aac acc cat ctg  
 His Lys Cys Leu Glu Cys Gly Lys Cys Phe Ser Gln Asn Thr His Leu  
 1 5 10 15

48

act cgc cac caa cgc acc cac

69

Thr Arg His Gln Arg Thr His  
20

<210> 125  
<211> 23  
<212> PRT  
<213> Homo sapiens

<400> 125  
His Lys Cys Leu Glu Cys Gly Lys Cys Phe Ser Gln Asn Thr His Leu  
1 5 10 15  
Thr Arg His Gln Arg Thr His  
20

<210> 126  
<211> 75  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (1)...(75)

<400> 126  
tac cac tgt gac tgg gac ggc tgt gga tgg aaa ttc gcc cgc tca gat 48  
Tyr His Cys Asp Trp Asp Gly Cys Gly Trp Lys Phe Ala Arg Ser Asp  
1 5 10 15  
gaa ctg acc agg cac tac cgt aaa cac 75  
Glu Leu Thr Arg His Tyr Arg Lys His  
20 25

<210> 127  
<211> 25  
<212> PRT  
<213> Homo sapiens

<400> 127  
Tyr His Cys Asp Trp Asp Gly Cys Gly Trp Lys Phe Ala Arg Ser Asp  
1 5 10 15  
Glu Leu Thr Arg His Tyr Arg Lys His  
20 25

<210> 128  
<211> 75  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (1)...(75)

<400> 128  
tac aga tgc tca tgg gaa ggg tgt gag tgg cgt ttt gca aga agt gat 48  
Tyr Arg Cys Ser Trp Glu Gly Cys Glu Trp Arg Phe Ala Arg Ser Asp  
1 5 10 15  
gag tta acc agg cac ttc cga aag cac 75  
Glu Leu Thr Arg His Phe Arg Lys His

25

```

<400> 129
Tyr Arg Cys Ser Trp Glu Gly Cys Glu Trp Arg Phe Ala Arg Ser Asp
 1             5             10             15
Glu Leu Thr Arg His Phe Arg Lys His
      20             25

```

```
<210> 130
<211> 75
<212> DNA
<213> Homo sapiens
```

```
<220>
<221> CDS
<222> (1) ... (75)
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```

<400> 130
ttc agc tgt agc tgg aaa ggt tgt gaa agg agg ttt gcc cgt tct gat      48
Phe Ser Cys Ser Trp Lys Gly Cys Glu Arg Arg Phe Ala Arg Ser Asp
  1                      5                      10                      15

gaa ctg tcc aga cac agg cga acc cac      75
Glu Leu Ser Arg His Arg Arg Thr His
                20                25

```

```
<210> 131
<211> 25
<212> PRT
<213> Homo sapiens
```

```

<400> 131
Phe Ser Cys Ser Trp Lys Gly Cys Glu Arg Arg Phe Ala Arg Ser Asp
 1          5          10          15
Glu Leu Ser Arg His Arg Arg Thr His
 20          25

```

```
<210> 132
<211> 75
<212> DNA
<213> Homo sapiens
```

```
<220>
<221> CDS
<222> (1) ... (75)
```

```

<400> 132
ttc gcc tgc agc tgg cag gac tgc aac aag aag ttc gcg cgc tcc gac      48
Phe Ala Cys Ser Trp Gln Asp Cys Asn Lys Lys Phe Ala Arg Ser Asp
  1                      5                      10                      15

gag ctg gcg cgg cac tac cgc aca cac      75
Glu Leu Ala Arg His Tyr Arg Thr His
      20                      25

```

<210> 133  
 <211> 25  
 <212> PRT  
 <213> Homo sapiens

<400> 133  
 Phe Ala Cys Ser Trp Gln Asp Cys Asn Lys Lys Phe Ala Arg Ser Asp  
 1 5 10 15  
 Glu Leu Ala Arg His Tyr Arg Thr His  
 20 25

<210> 134  
 <211> 75  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(75)

<400> 134  
 tac cac tgc aac tgg gac ggc tgc ggc tgg aag ttt gcg cgc tca gac 48  
 Tyr His Cys Asn Trp Asp Gly Cys Gly Trp Lys Phe Ala Arg Ser Asp  
 1 5 10 15  
 gag ctc acg cgc cac tac cga aag cac 75  
 Glu Leu Thr Arg His Tyr Arg Lys His  
 20 25

<210> 135  
 <211> 25  
 <212> PRT  
 <213> Homo sapiens

<400> 135  
 Tyr His Cys Asn Trp Asp Gly Cys Gly Trp Lys Phe Ala Arg Ser Asp  
 1 5 10 15  
 Glu Leu Thr Arg His Tyr Arg Lys His  
 20 25

<210> 136  
 <211> 72  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(72)

<400> 136  
 ttc ctc tgt cag tat tgt gca cag aga ttt ggg cga aag gat cac ctg 48  
 Phe Leu Cys Gln Tyr Cys Ala Gln Arg Phe Gly Arg Lys Asp His Leu  
 1 5 10 15  
 act cga cat atg aag aag agt cac 72  
 Thr Arg His Met Lys Lys Ser His  
 20

<210> 137  
 <211> 24  
 <212> PRT  
 <213> Homo sapiens

<400> 137  
 Phe Leu Cys Gln Tyr Cys Ala Gln Arg Phe Gly Arg Lys Asp His Leu  
 1 5 10 15  
 Thr Arg His Met Lys Lys Ser His  
 20

<210> 138  
 <211> 78  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer for PCR

<400> 138  
 tgtcgaatct gcatgcgtaa cttcagtcgt agtgaccacc ttaccaccca catccggacc 60  
 cacactggcc agaaaacc 78

<210> 139  
 <211> 81  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer for PCR

<400> 139  
 ggtggcggcc gttacttact tagagctcga cgtcttactt acttagcggc cgactagta 60  
 gatctgaatt cattcaccgg t 81

<210> 140  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(69)

<400> 140  
 ttc cag tgt aaa act tgt cag cga aag ttc tcc cgg tcc gac cac ctg 48  
 Phe Gln Cys Lys Thr Cys Gln Arg Lys Phe Ser Arg Ser Asp His Leu  
 1 5 10 15  
 aag acc cac acc agg act cat 69  
 Lys Thr His Thr Arg Thr His  
 20

<210> 141  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 141

IV    II III

1                    5                    10                    15  
 Lys Leu Asn Arg His Lys Lys Arg His  
                   20                    25

<210> 146  
 <211> 69  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
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<400> 146  
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 Tyr Ile Cys Arg Lys Cys Gly Arg Gly Phe Ser Arg Lys Ser Asn Leu  
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 atc aga cat cag agg aca cac                    69  
 Ile Arg His Gln Arg Thr His  
                   20

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<400> 147  
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 ata agg cat cga aga act cac                    69  
 Ile Arg His Arg Arg Thr His  
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 Tyr Leu Cys Ser Glu Cys Asp Lys Cys Phe Ser Arg Ser Thr Asn Leu  
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Xaa	Xaa	Cys	Xaa	Cys	Xaa	Xaa	Xaa	Xaa	Xaa	Gln	Xaa	Thr	His	Xaa	Xaa
1				5					10					15	
Gln	His	Xaa	His												
			20												

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Xaa Xaa Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa Arg Xaa Asp Lys Xaa Xaa

1 5 10 15  
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1				5					10					15	
Arg	His	Xaa	His												
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Xaa	Xaa	Cys	Xaa	Cys	Xaa	Xaa	Xaa	Xaa	Xaa	Gln	Xaa	Gly	Asn	Xaa	Xaa
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